Welcome to the April SES Webinar

“Why, What and How” on education of Standards

Guest Speaker: Signe Annette Bøgh
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Education about standards
-the why what and how

Signe Annette Bogh
Danish Standards
Agenda

• Short introduction
• Education about standards
  – Why do we need it
  – What should be taught
  – How can we teach it
• Reflections
Danish Standards – the national standard body in Denmark

- Denmark’s official standardization organisation
- Founded in 1926
- 150 employees in Copenhagen
  (half in standardization)
About me

• Background:
  – Master of Science in engineering – International Technology Management
  – Responsible for research and formal education in Danish Standards
  – Editor and co-author of A World Built on Standards – Available worldwide in English, Polish, Czech and Romanian
  – Co-developer of three educational games and other educational material
  – Member of European working groups on education about standards
  – International speaker
  – Guest lecturer at several universities and schools in Denmark
    • On topics such as standardization, CE-marking, regulation, innovation and strategy
  – Participant/partner in several European research projects involving standards.
Education about standards
Why?
• Few students and young professionals participate in standardization.
• In Denmark for the past many years average age of a committee member is close to 50.
• Students and young professionals are unaware of the standardization system.

— Is this a problem?
Why

• Why do we need the younger generation in standardization?
  – Knowledge transfer
  – New input and ideas
  – Start-ups and entrepreneurs

• Unfortunately, education about standards in formal education is still lacking in most places.
What we want to achieve

• Approximation of the education and standardization communities
• Increased inclusion of standardization issues in teaching
• More diverse standardization committees
• Increased long term number of standards users
• Increased number of standardizers
• Awareness of the role of standards for young people dealing with innovation, thus resulting in raising new generation innovators and young entrepreneurs with knowledge on standards.
Challenges

- Cramped curricula
- Lack of knowledge among teachers and professors
- Lack of teaching material incl. research based material
- Not enough support from business
- Too few SDOs involved in education
- Etc

Uh-oh
The unspoken challenge

Are we biased?

• We would like younger committee members, but:
  – ”they should not be too young and inexperienced”
  – ”can they really contribute with anything?”
  – ”is knowledge from a ‘rookie’ really as valid”?  

It’s kind of like applying for your first job. You need to be 25 years old with 10 years of experience.
So…. Are young people of any use?

- Case: Universal robots – industrial co-bots

Universal robots started out next to the university’s robotics facilities in a very small room.”

Universal Robots now has offices in the United States, Spain, Germany, Italy, Czech Republic, China, Singapore, India, Japan, Taiwan and South Korea.

“Standardization was a huge benefit for us. Firstly, we gained new knowledge about future market demands that we could use directly in our product development. Secondly, we were given the opportunity to influence the design of the forthcoming standards to better fit our robot.”
Education about standards
What?
What do we need to teach?

• Combination of hard and soft skills
• Many elements can be taught across courses or even faculties with slight modifications
• Preferably as part of technical or subordinate course
Hard skills (1/2)*

- To know the **basic terms** used in standards and standardization
- To be able to **identify the need** for standards
- To be able to **search for and select** appropriate standards
- To be able to implement standards in **product or process development**
- To be able understand the **impact** of implementing standards
- To know the **standardisation institutions** and their processes
- To be able to identify the **need for getting involved** in standardization

*Source: Knut Blind and Sandra Drechsler, European Market Needs for Education in Standardisation/Standardisation-related Competence, 2017*
Hard skills (2/2)*

- To be able to search for and select **appropriate standardisation organisations**
- To be able to be passively involved in standardisation processes **(observer)**
- To be able to be actively involved in standardisation processes **(participant)**
- To be able to judge which **form of standardisation** (formal vs. consortia) is appropriate
- To be able to propose **new work items** in standardization
- To be able to **strategically influence** the agenda in standardisation processes
- To be able to understand the **impact of standardisation processes**

*Source: Knut Blind and Sandra Drechsler, European Market Needs for Education in Standardisation/Standardisation-related Competence, 2017
Supplementing knowledge

- History of standards
- Types of standards
- The abundance of standards
- Regulation – CE-mark
- Certification
- How to read a standard
Soft skills

• Negotiation
• Cooperation
• Cultural understanding
• Flexibility
• Strategic thinking
• Ability to learn new things
• Etc.
Realistic?

• Wau, that’s a lot!
• But!
  – Tailor the lesson/course to fit the target audience.
  – In my experience, you can give students a basic understanding of the most relevant aspects in app. 4 hours.
  – Remember, they do not need to be experts by day 1.
What about young professionals?

• Young professionals need the same skills and competences as students (mentioned above)
• However, most often they are not being taught these things during their formal education and, according to studies, the majority have not been specifically trained by their employer on standardization.

• How can they be expected to have the right knowledge?
Education about standards
How?
What students think...

- Before having basic knowledge on standardization: "Standards are a boring, but sometimes necessary, evil."

- After gaining knowledge on standardization: "Standards are an important tool that I can use to add value in my future career."

- Issue: Standardization is a part of many jobs, but not many job descriptions.
Why we use problem based learning

• Students get to apply knowledge to authentic problems (real or made up)
• It encourages reflection and independent acquisition of knowledge, skills and competences
• Can help bridge the gap between theory and practical application
Why we use contextualization

• Makes a complex subject easier to comprehend
• Gives students the feeling that this is relevant for them
• Makes the topic more attention-grabbing when you relate it to something they are interested in or something they encounter in their everyday life
• Increases understanding – especially if you activate the students and encourage reflection
How we do this

Tools we use:
• Textbook "A World Built on Standards" (www.ds.dk/education)
• Games/simulations
• Examples and cases related to specific fields of study (work in progress)
What is a standard

A standard is a document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.
Textbook

• Easy to use
• Colorful 😊
• Includes
  – Examples
  – Cases
  – Discussion points
  – Multiple choice questions

Available for free:
www.ds.dk/education
Using games/simulations

- Making a simple standard – good teaching lessons.
- Standardization in a committee – the flying car.
- Standardization strategy – e.g. You have invented a contact lens that can alter the world around you...

What is your standardization strategy?
Using games/simulations

We use games or simulations in almost all our guest lectures.

Educators in Denmark can use the games for free – they come with a manual.
Kahoot

- Can include an introduction video
- Can be used by anyone
- Competitive
Young professionals

• Young professional programs
• Support from employers and SDOs
• Courses for unemployed
• Mentoring
Education about standards
Reflections
• Young people do not lack the interest in standardization once they learn of its existence.
• Do we need a shift in paradigm in the world of standardization (in regard to including younger people)?
• Is it possible to establish a coordinated effort?
Questions?
Contact

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